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WILDLIFE

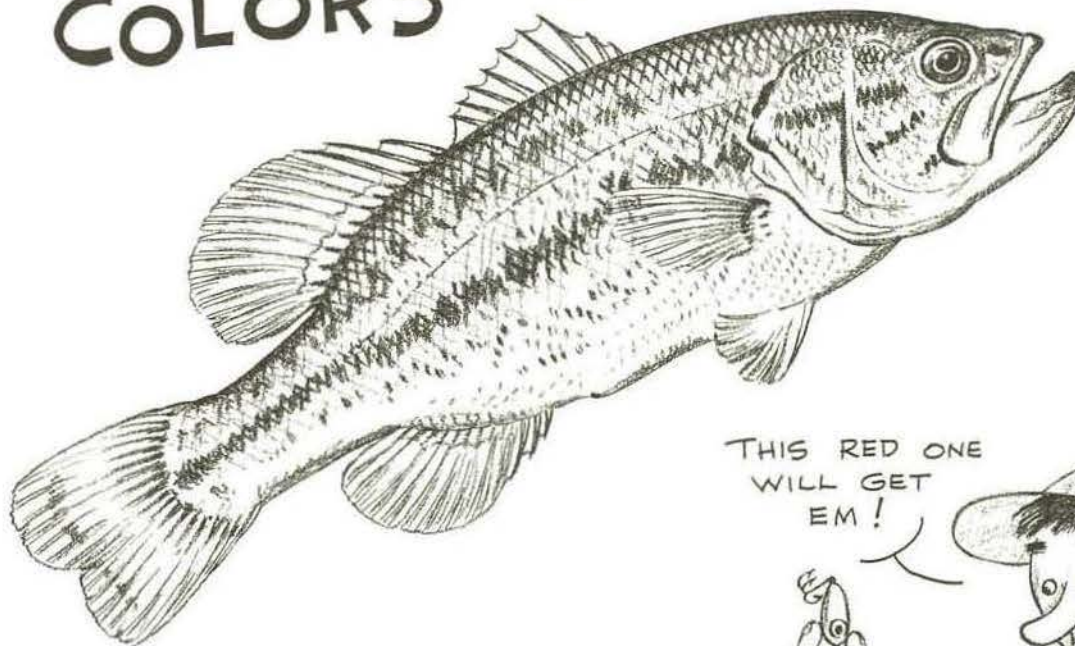
AUGUST 1973

The Florida Magazine for all Sportsmen

35 CENTS



CAN FISH SEE COLORS ?



BLUE



WHITE



RED

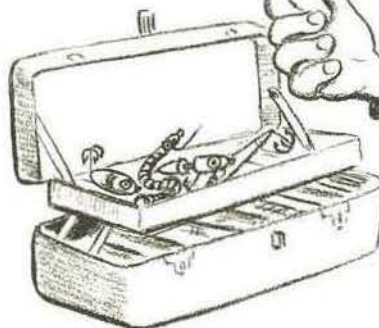


YELLOW



BLACK

THIS RED ONE
WILL GET
EM!



OR
MAYBE
THE
YELLOW
ONE?

A STUDY BY BIOLOGIST-SCIENTISTS REVEAL THAT BASS SEE COLORS ABOUT LIKE MAN DOES WHILE LOOKING THROUGH A PAIR OF YELLOWISH TINTED GLASSES • ALL FISH CAN NOT BE JUDGED TO HAVE THE SAME COLOR VISION AS BASS • SOME MAY SEE NO COLOR AT ALL-ONLY DEGREES OF BRIGHTNESS FROM DARK TO LIGHT

NOTE TO FISHERMEN :

STUDIES HAVE SHOWN THAT BASS ARE STRONGLY ATTRACTED TO RED (ALL SHADES FROM DARK TO PINK) WITH YELLOW SECOND

Florida WILDLIFE

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★

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The Cover

The raccoon has a lot going for it—cleanliness, cleverness, a cast iron stomach, keen senses, and a generally peaceable disposition. But don't crowd a mother coon! See page 28.

Photo By Wallace Hughes

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Industrial Acres for Wildlife

A NEW WILDLIFE SANCTUARY that includes several public dove fields has been established by the Game and Fresh Water Fish Commission on the 1400-acre plant site of Air Products and Chemicals, Inc., on Escambia Bay in Santa Rosa County. Called Air Products Wildlife Sanctuary, the tract also contains a 99-acre biological pond system that is maintained to attract waterfowl and other birdlife.

"This is a pilot project and an ideal example of cooperation between industry and government to provide for the needs of wildlife and people," said Commission Director O. E. Frye, Jr., in announcing official action was taken approving the new sanctuary at the June meeting of the 5-member Commission, which met at Tampa.

"We are pleased with the arrangement and commend Air Products for having taken the initiative in this cooperative effort. Working together, we have a tremendous opportunity for enlarging the concept of government and private industry as members of the same team, striving toward common conservation goals. Air Products Sanctuary is a model wildlife project," Frye stated.

No state funds will be spent on the sanctuary.

Air Products will bear the cost and do the cultivating and maintenance work, and the property involved will remain in the ownership of the corporation.

The dove fields, one of 20 acres and two of 10 acres each, have been sown to browntop millet and will be open to public hunting of migratory doves by special \$2.00 daily permit on days to be designated during the federally authorized season for Florida, according to Dr. Frye. They are located on the north and west edges of the plant property, about a mile away from the sanctuary center.

"The harvesting of migratory mourning doves through regulated hunting is an accepted method of game management, and is recognized as such by conservation groups," said Frye.

The actual sanctuary is closed to hunting. It occupies that portion of Air Products' property south of the plant, and borders Escambia Bay. The terrain includes grassland, pine woods, hardwoods, marsh, four ponds, and the bayshore.

Allan McMillan, plant manager for Air Products, said the Commission's designation of the area for wildlife purposes came as a result of a company proposal about a year ago. "We are happy to put



Air Products' 1400-acre industrial site, left, on Escambia Bay in Santa Rosa County, is the scene of a new wildlife sanctuary which includes public dove fields, 99-acre pond system for waterfowl, and other wildlife attractions, like martin house and 30 wood duck nesting boxes (arrow, above). Seen below right in enlarged detailed drawing, are exact locations of three public dove fields which total 40 acres. They'll be open this season.

this acreage into a use which will benefit wildlife and area citizens," McMillan said.

Air Products already has a mixed colony of wild and domestic ducks established on the ponds, and has stocked fresh water fish in two of the ponds. In addition, 30 wood duck nesting boxes have been erected, some of which were used by wild wood ducks last spring.

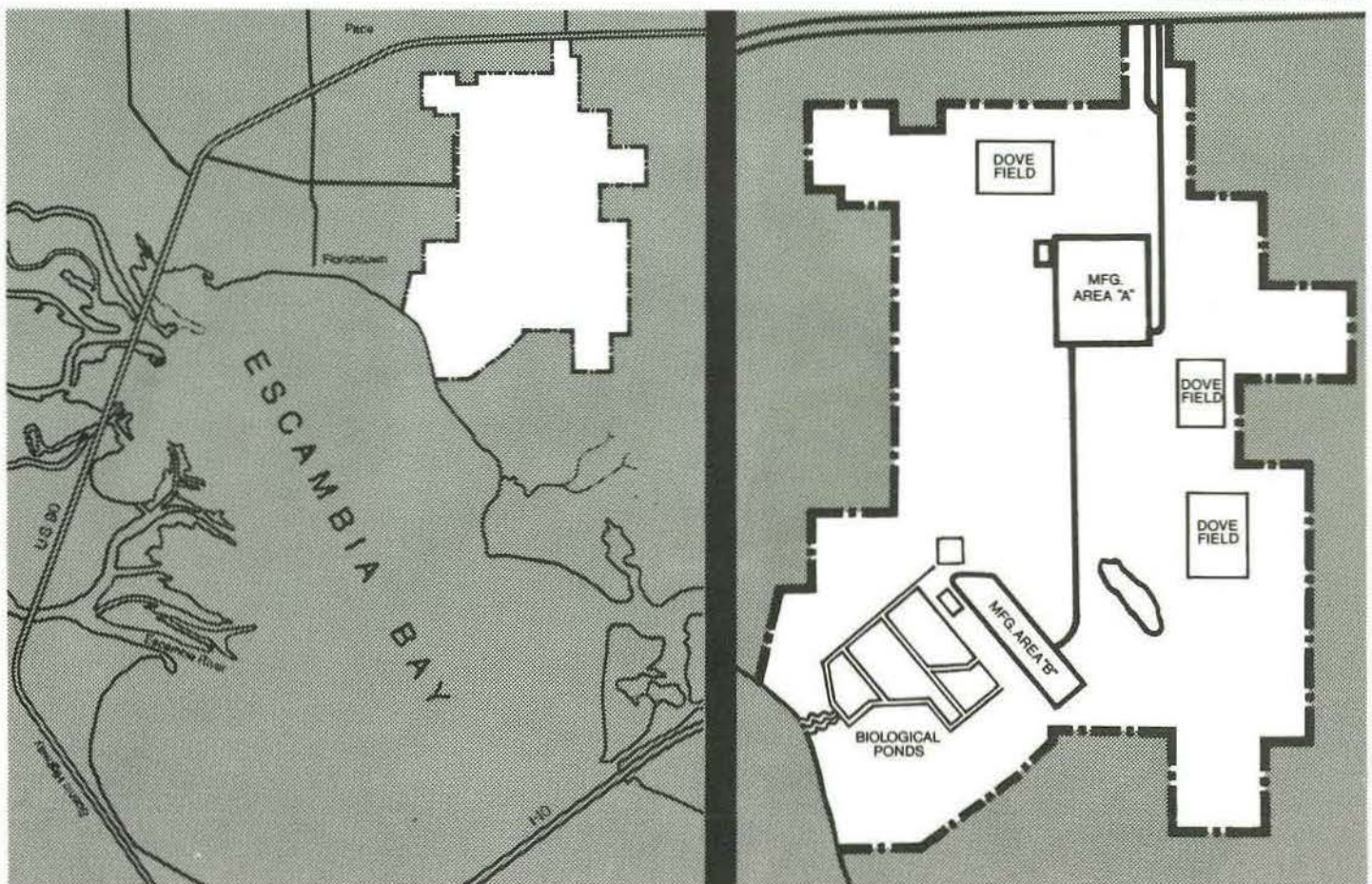
Ten martin houses have also been erected within the sanctuary, and plantings of wildlife food have been made along the edges of the ponds, according to Roy Duggan, environmental engineer for Air Products.

A small colony of nonmigratory Canada geese has been placed on the sanctuary ponds by the Game Management Division of the Game and Fish Commission in hopes that migratory Canadas will also find the area attractive in future seasons.

The sanctuary has been posted with signs stating that the area is closed to hunting by order of the Game and Fresh Water Fish Commission. The Santa Rosa County Sheriff's Department has accepted the primary responsibility of local law enforcement on the sanctuary, with assistance from wildlife officers.

Specific regulations governing the operation of the dove fields during the coming season will be announced when they are complete, says James A. Powell, chief of the Commission's Game Management Division, Tallahassee. ●

Photos By Ray Thigpen



Northwest Region

(Jefferson County westward, inclusive)

Deer: November 10 through January 20.**Turkey:** November 10 through January 20 (Gobblers only).**Quail and Squirrel:** November 10 through March 3.**Northeast, Central, South and Everglades Regions****Deer:**

November 10 through January 6, except—

In DeSoto, Hardee, Manatee and Sarasota counties—November 10 through 25 and December 8 through 30.

No open season in the Florida Keys of Monroe County.

Turkey:

November 10 through January 6, except—

In DeSoto, Hardee, Manatee and Sarasota counties—November 10 through 25 and December 8 through 30.

No fall open season in Alachua and Suwannee counties; or in that portion of Columbia County south of State Road 240 and west of State Road 47.

No fall open season in that portion of the Everglades Region lying south of Alligator Alley (State Road 84).

Quail and Squirrel:

November 10 through February 24.

No open season on fox squirrel in Lee, Hendry, Palm Beach, Monroe, Collier, Dade and Broward counties.

Statewide**Wild Hog:**

November 10 through January 6.

In Palm Beach and Alachua counties, and in that portion of Levy County lying between the Suwannee and Withlacoochee rivers, generally bounded (north to south) by U.S. 27A, SR 337, lower SR 121, and U.S. 19-98, and including those lands lying north and east of U.S. 27A in R16E and belonging to International Paper Company.

In that portion of Collier, Dade and Monroe counties west of Levee 28, south of Alligator Alley (SR 84), north of the Everglades National Park boundary, and east of SR 29.

Bear:

Bear may be taken in Baker or Columbia counties, and on Tyndall Air Force Base in Bay County, during the established open season for taking deer; and by special permit on designated wildlife management areas.

Turkey Gobbler: Spring Season

That portion of the state lying south of State Road 50: March 9 through March 24.

That portion of the state lying north of State Road 50: March 23 through April 7.

Shooting Hours—Resident Game

One-half hour before sunrise to one-half hour after sunset; except the Spring Turkey Season when shooting hours will be one-half hour before sunrise to 12-noon.

Archery Season (statewide)

September 8 through September 30

Legal Game—Deer of either sex (except fawn), bear (in Baker or Columbia counties, and on Tyndall AFB in Bay County), turkey, quail, squirrel, rabbit, and wild hog.

No open season in Broward or Dade counties; in that portion of Palm Beach County south of SR 80; in that portion of Hendry County east of L1 and L2 levees; or in Collier or Monroe counties south of U.S. Highway 41 (hunting permitted in the tract lying between U.S. 41 and Loop Road, SR 94).

The possession or use of firearms while hunting with bow and arrow during the archery season is prohibited. The taking of deer from airboats is prohibited during the archery season. Crossbows are prohibited. The use of any unleashed hunting dog by any person hunting with bow and arrow during the archery season is prohibited. Persons holding a valid archery permit in addition to a regular hunting license may hunt on designated wildlife management areas and on open lands during the established archery season.

Florida Hunting Licenses**Exempt**—Residents 65 years of age and over and all children under 15.**Issued from County Tax Collector offices, and authorized sub-agents.** Costs include issuing fees.**Servicemen, stationed in Florida, are considered residents of Florida insofar as licenses to hunt and fish are considered.****Resident, Annual**

Series AK—Hunting-Fishing Combination, Statewide \$10.50

Series K—State 7.50

Series I—Home County 2.00

Series J—Other than Home County 4.50

Non-Resident

Series L—State, Annual 26.50

Series M—State, 10-day Continuous 11.50

Series M1—County, Annual, Owners of and paying taxes on 3000 acres land 11.50

Resident or Non-Resident, Annual

Series H—For hunting on licensed private hunting preserves only 5.50

Archery Season Permit 5.00

Issued from Office of Commission, Tallahassee

Series Y—Guide, required for guiding hunting parties 10.00

Alien Hunting 50.00

Bag Limits

(for turkey and deer sex evidence requirements, see General Regulations Summary)

	Daily Bag	Season Bag	Possession Limit
White-tailed Deer	1	2	2
Turkey—Fall	1	2	2
Spring	1	2	2
Squirrel, Gray	10		20
Squirrel, Fox	2		4
Quail	12		24
Rabbit	10		20
Bear	1	1	1
Wild Hog	1	2	2

Putt-Putt Canoe

FISHING

there are several ways to mount small outboard motors on canoes—and several styles of canoes now designed to accept little kickers



By CHARLES WATERMAN

MY WIFE AND I were fishing with Stu Apte in his boat at Key West, and Stu caught a good-sized shark. He wanted his lure back so he gaffed the shark by the lip and pinned it to the gunwale in approved fashion, with the intention of releasing it. But the lure was stuck very close to some ominous teeth and Stu needed some special tools. He had his fisherman's pliers, of course.

"Wait a minute," said Debie, and she got out her black handbag, then handed Stu some long needlenose pliers and a long folding knife with a slender blade. That was just what Stu needed; he got the lure and released the shark in short order.

Next day I was with Stu while Debie fished with someone else. Stu caught a big jack and was trying to get back his lure when I asked if I could be of any assistance.

"No," said Stu. "Not unless you have Debie's bag with you."



For a good many years I have noticed people borrowing things from Debie's black bag, and there are few days when it doesn't serve up something for somebody. In the interest of science, I felt it should be emptied and its contents catalogued.

Now this isn't her Sunday handbag. This is an old, plain, black leather job that got too shabby for dress-up use, but had plenty of room for odds and ends, and Debie announced she was going to start taking it fishing whenever she went into a boat. It wasn't to be a tackle bag, she explained. It was to hold just a few odds and ends that often get left at home and don't normally go in a tackle box. Not only does it spew forth essentials at regular intervals, but it has a way of collecting things like unusual seashells or colored rocks.

Anyway, I appropriated it the other day and shook out the contents which were:

- 1 package of Melba toast in sealed paper
- 2 tubes of sun lotion
- 1 large can of insect repellent
- 3 packages of facial tissue
- 1 bottle of aspirin
- 1 bottle and 1 stick of smear-on insect repellent
- 2 lipsticks
- 1 jar of flowers of sulphur (for redbugs)
- 1 tube of lip shield (prevents sunburn)
- 1 dime (for emergency use in telephone)
- 1 emery board
- 1 bottle of reel oil
- 1 long folding knife with hook sharpener
- 1 jar of pills (for insect allergy)
- 2 Band-Aids
- 1 chain fish stringer
- 1 tin of candy drops
- 1 terry cloth hand wiper with snap for belt
- 1 pair of needlenose pliers and sheath.

You understand, of course, that these were the contents at the time I made the inspection. On any given day the list might be somewhat different. I can't think of anything in the above list which

(Continued on next page)

A check of Debie Waterman's handbag, seen left, reveals a few items which are not always found in a tackle box!

(Continued from preceding page)

hasn't been used at one time or another. But I look funny with a handbag.

THERE IS some misunderstanding about the use of a jig in shallow water. Although there are endless ways of making it act differently, you can roughly divide jig fishing into two methods—working it straight down, and casting it away from the rod, either to bump it along the bottom or to whip it along at high speed.

"Deep-jigging," as applied to ocean fishing, usually means working the lure straight up and down, involving little or no casting. A great deal of black bass jigging is done that way when the bottom cover is thick, the principle being that a jig could be operated straight down into treetops or brush without hanging up. Reeled into a treetop from the side, the jig is likely to snag.

But whatever method is used and whatever the fish sought, most of the strikes come when the lure is on the way down rather than up. That's what makes strike detection difficult and that is why some good jiggers become expert at watching their line at the point where it enters the water.

THE DRAWDOWN EXPEDIENT has proved highly satisfactory in improving the fishing in numerous Florida lakes. Let the water get low, exposing old bottom to the sun; then bring the water back and the fishing improves for a time, the length of time depending on a lot of factors. This is the pattern of natural lakes, of course, but there were years of impoundment "management" when a steady and constant level of water was believed to be best for a fish population. Those were the days of the seven or 8-year cycle during which fishing boomed in a new lake and then faded out as the lake aged.

Now these things are not news anymore, but it is interesting to apply them to small natural bodies of water, some of which nearly dry up. Most bass fishermen think the ideal time for fishing potholes comes like this: There is drought and the hole dwindles to almost nothing. Then come normal or abnormal amounts of rain and water gets high. Now when it begins to drop again you should have the best fishing. A similar pattern is followed in many tidal rivers, the fresh water fish population of the brackish water resulting from that sort of development upstream.

I FIRMLY BELIEVE I've had more actual jumps from mudfish (grindles or bowfin) individuals than from black bass. I think this probably comes from the fact that they don't shoot the works quite as quickly and seem to recuperate rapidly when they gain or are given a little rest.

I got a whole series of jumps from one the

other day by giving him brief rests and then tightening up now and then. Many of my mudfish "rattles" have been on very light tackle, often on tiny spinner lures and small monofilament. The reason is that I've fished some very shallow edges over mud bottom for panfish, and thus find myself throwing the little things into mudfish home grounds.

As with other fish, there are individuals who won't jump at all. I think the two largest mudfish I've ever seen were in south Florida. One was in Deep Lake near Copeland, Florida, and that one grabbed at my paddle when we were fishing for bass. The other was in a canal by the Tamiami Trail and struck a bass lure but got away.

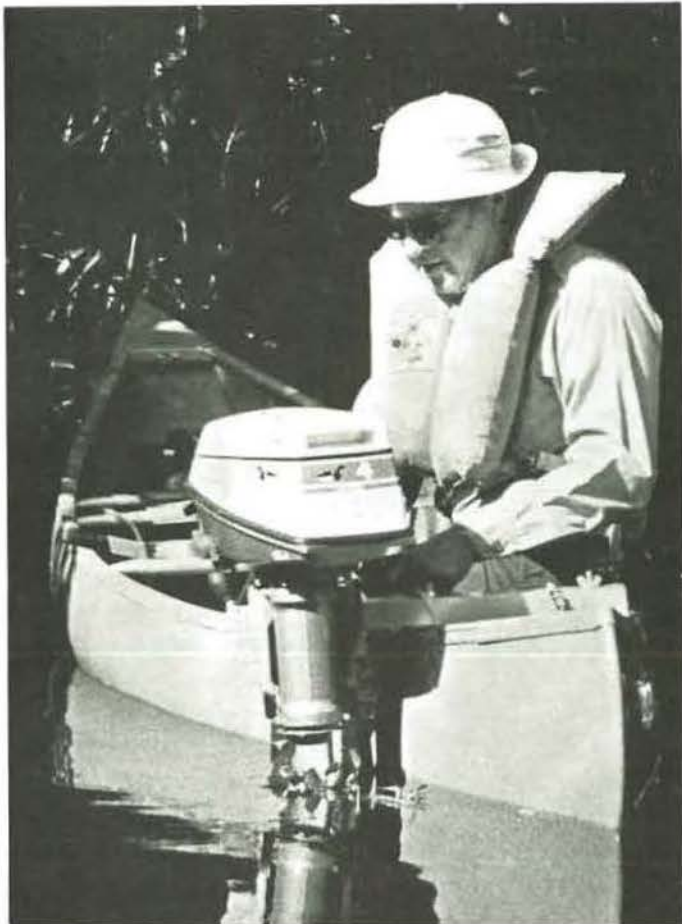
I know that mudfish will eat almost anything they can catch, but I never recall having had one chase a small bass when it was hooked. I don't say it never happens, but I have caught very small bass right among the mudfish with no attacks. Watch me get letters on that one!

ALTHOUGH I HAVE puttered awkwardly off and on with canoes most of my life, I have had very limited experience with motors on them. Perhaps my recent experiences might be of value to others thinking of such power, but who have never tried it up until now. Some of the little pitfalls might be overlooked by more experienced reporters as being too obvious to mention. There ain't nothing too obvious to mention.

There are three kinds of canoes used with motors. List them as the square-sterned canoe (at one time termed a "sport boat" by a leading manufacturer), the canoe with the stern brought almost to a point, but squared off just a little to accept the motor, and the canoe with both ends pointed, which carries a motor on a bracket at the side. Perhaps a fourth type, less common than these, has a pointed stern but a sort of "wishbone" arrangement for a light motor up over the pointed section.

The boat I have been using with a motor is the Mohawk 16-footer, made in Longwood, Fla. With that I use a 1973 Johnson 4-horse motor. That's considered a good size engine for canoes, and something smaller will serve just as well under most conditions. My reason for picking the 4-horse was that it has a separate gas tank, and that seemed like a good idea for an outfit which would be hauled in a car as much as mine is. The canoe is pointed at both ends, and I use the motor on a bracket.

The 4-horse is all I need, and when I'm in the rig alone it's a little more. For example, when I'm seated in the stern with very little load up forward and open the motor up, the stern squats enough that the lower unit housing throws a spray of water into the canoe. When I back off the throttle, things work fine.



Shown above is outboard motor operated by author on 16-foot canoe. The bracket is of aluminum. The canoe is fiberglass.

How fast do I go comfortably? I'm guessing it's around 9-miles-an-hour, but it's difficult to guess water speeds. Give me a passenger and I'd probably go just as fast or faster since I could open the motor up.

One canoeist said he could paddle that fast. Well, maybe so, but I'll bet the motor will run longer at that speed. It sure beats *my* paddling.

How about steadiness for fishing? No problem at all, and the location of the motor bracket doesn't interfere with my paddling. I would like to point out one little matter that might not be considered by someone using a bracket mount for the first time.

Since the motor is located well back toward the sharp stern, it doesn't exert the tipping action of a similar weight on one side amidships, and when no one is in the canoe it doesn't list very much. However, if you run the rig up to a grassy bank, get out, and start to pull it up from the bow with the motor in the water, there comes a point when only the very narrow part of the stern is in the water and the motor on the bracket tends to tip strongly. This maneuver should be executed with caution, and the wider part very near the ground, or you might dunk your engine.

All in all, I think the little motor works beautifully. The canoe hobby is growing rapidly in

Florida, but we're not a state of real canoe users. If we want to carry a big load, we're more likely to use a boat. In the North, along the Canadian border, there are big freight canoes and the general canoe shape is employed for work it wouldn't be considered for elsewhere.

If you have a canoe, there could well come a time when a motor would be a big help.

THERE ARE a couple of important new books for fishermen. Frank Woolner has written *MODERN SALTWATER SPORT FISHING*, published by Crown Publishers, Inc., 419 Park Avenue South, New York, 10016, \$8.85. He is one of the nation's leading salt water fishing authorities and has authored a whole list of excellent how-to outdoor books, ranging from striped bass to ruffed grouse. I would say this is the most inclusive book on the salt water subject ever written. I can't find anything wrong with it, but I am a Woolner fan and may be prejudiced.

Norman Strung and Milt Rosko, both of whom have been around the outdoor writing field for a while, have written *SPINFISHING, THE SYSTEM THAT DOES IT ALL*, \$8.95, Macmillan Publishing Co., Inc., 866 Third Avenue, New York, N.Y. 10022. This one covers the whole field, with Strung taking the fresh water and Rosko doing the salt. They're good writers and I think all fishermen can learn from this one.

I HAVE A NEW THEORY about some of the erratic attacks certain fish make on lures and live baitfish. Every angler has seen fish swirling around a retrieved lure without touching it when it's quite obvious he could grab it if he wanted to. There's the thought that a fish which follows close behind a lure and stays on its trail for a considerable distance is trying to smell it. There's the idea that a fish which swings about a lure with a lot of commotion is simply trying to get a better look. Now comes the Waterman theory of fish that cut all sorts of didoes without striking.

I watched three jacks chase a hapless mullet the other day and could see the whole thing from considerable height. Then the jacks were joined by a small, speedy shark which eventually got the mullet after a series of frantic jumps by the victim.

I believe it was the very best view I ever had of a wild chase of that sort, and I now believe that some of that wild chasing and swerving is for the purpose of confusing the prey. Maybe it's impossible for the predator to catch it from behind since it can swerve at the final instant, even though the pursuer is faster. But by darting all about it, the aggressor just might confuse it enough to make the catching easy.

You can't prove I'm not right, and we know gamefish herd schools of baitfish. ●



Shooting Instinctively

By CHARLES DICKEY

With lots of fun and no drudgery, this proven method of marksmanship training can have you breaking tiny targets tossed in the air in one session—with a BB gun. No trick shooting's involved; just careful attention to techniques of snap-shooting as taught by military



IF YOU WANT TO SHARPEN your shotgun shooting for the coming hunting season, the quickest, easiest, and cheapest way to do it is with a BB gun.

If you want to teach a youngster or your wife the fundamentals of wing shooting, you can do it in a few hours with an air gun. In fact, after a total of two or three hours of short practice sessions, your boy will be hitting quarters thrown in the air. If he gets hooked, it won't be long before he can hit a dime or aspirin tablet. Some shooters get so accurate they can hit a BB shot tossed in the air.

Sounds wild, doesn't it? It's called instinctive shooting. There's really nothing new about it. British wildfowlers were writing about it nearly

a century ago. The U.S. Army revived it to teach soldiers rapid pointing, rather than aiming, for the special close-in rifle shooting dictated by conditions in Vietnam.

Instinctive shooting is often called snap shooting. You have probably noticed that most of the top quail shooters you've seen in action were snap shooters. Here is the way it works on either a moving or still target. The shotgun—or rifle or pistol—is simply an extension of the eye. You have no problem in following a moving target with your eyes. Likewise, if you suddenly point your forefinger at a still or moving target, with both eyes open, your finger is pointing at it exactly. If the target continues to move, you have no difficulty

in keeping your finger on it, as long as your eyes are concentrated on the target and not on your finger. When you snap shoot instead of pointing your finger at the target, you substitute a shotgun.

In snap shooting at quail, the successful gunner does not consciously see the gun barrel; his eyes are focused on the bird he intends to hit. No matter how the quail zigs and zags, his eyes concentrate right on the bird. If the shotgun is an extension of his eyes, then it follows that where his eyes swing, so will the gun. Right?

Right. The technique is to get the gun mounted in the same position each time. If the stock is on the arm one time, the shoulder socket the next, and higher up the shoulder the next, then the eyes have no way of compensating for these differences. If the gun is to become a reliable extension of the eyes, then it **MUST** be mounted and held the same way for each shot.

In instinctive shooting, the shooter relaxes and makes his conscious mind go away. He does not think. That's right. He does not think.

The shooter concentrates both eyes on the target. He lets his relaxed subconscious take over the motor responses and computer programming of all movements of the gun and his body. His eyes concentrate on the target, and his subconscious mounts the gun; as the target moves, so do his eyes and their extension—the gun muzzle; the subconscious mind controls when he pulls the trigger, and the follow-through.

"Wait," you say. "What about leading a moving target?"

The answer is that in snap shooting you forget

about leading. Your subconscious mind-computer handles this too. If your mind and body are relaxed, the brain instantaneously makes all the necessary calculations subconsciously, much faster than you could ever do it consciously. Your eyes swing with the moving target, and so does the gun, which is an extension of your eyes, remember.

Consciously intersecting a rising and curving target with a shot cone is a highly complicated mathematical problem which few of us could work out in a week with a desk full of trigonometry books. If your subconscious mind is working free and easy, it solves the problem instantly and activates your muscles to swing the gun, pull the trigger at the correct instant, and follow through.

The worst mistake you can make in trying to hit a moving target is to consciously try to think through each step and make computations and corrections. You run out of time. The target either falls to the ground or is out of range while you're balking and correcting and changing your mind.

Shooting a rifle at a distant stationary target is a different problem. You have time. You aim, not point, and you consciously make small corrections for drop, wind and previous shots. There is time. On a moving target, there isn't time for conscious calculation, so you relax and tell your subconscious to handle it.

The subconscious can be trained. You feed input as one does to a computer. That is why one practices anything, to drill it into the subconscious. When sudden action, or an emergency, develops, the subconscious has been through it before and

(Continued on next page)

Photos By Steve Theg



Ready position for instinctive shooting. Quick Skill style, is being demonstrated by author in Photo 1. It's upsy Daisy in Photo 2, as the air rifle is mounted and comfortably cheeked, from which position you go after both aerial and ground targets. In lowering on ground targets, you must shoot the instant target's seen, as shown in Photo 3. Don't balk before taking aim; that's not instinctive shooting.



Photo By Steve Theg

(Continued from preceding page)

knows how to handle it from its computer bank of stored responses. Do you think a pianist could play a complicated symphony if he had to consciously think what all ten fingers were doing, what the notes said, and when to tap the pedals? It is impossible! The conscious mind can handle only one thought at a time; the subconscious can handle many things at the same time.

There is yet one more aspect of instinctive shooting. The subconscious mind is extremely sensitive to conscious negative and positive thoughts. If you think you are going to miss a target, you sure as heck will. You can talk yourself into missing an easy shot, any time. If you want to hit a target, you have to think positive and believe you will hit it. It's called confidence. Positive thinking somehow mysteriously affects the subconscious mind. It makes us do better in any sport, business, or any other activity.

There were many reasons the army turned to instinctive shooting with air guns in basic training, and even in advanced courses where shooting distances were short. The same reasons apply to civilians who shoot for fun. A major factor is cost. To practice with a shotgun on clay targets costs from 10 to 15 cents a shot. It costs less than one-twentieth of one cent to practice with a BB. It's easy for us to understand this pocketbook factor, consciously or subconsciously.

Many rookies in the army had never fired a gun before. It made better sense for them to start on a quiet, non-recoil air gun rather than a noisy high-powered rifle with a lot of kick. A rookie who

has never fired a shot can be trained quickly with instinctive shooting to hit still and moving targets, sometimes quicker than a person who has shooting experience and has to break bad habits. Hitting a target quickly—success—develops confidence. Confidence breeds more confidence.

The U.S. Army program was developed in cooperation with Daisy, a manufacturing name synonymous with air guns. One of the first steps was to design an inexpensive air gun with an adult-sized stock so that after BB training when a soldier mounted a rifle it would feel natural. Daisy makes the same air gun for civilians and sells it in a kit called Quick Skill. The kit includes two pairs of shooting glasses, targets, a supply of ammo and an instruction booklet. (Free information on Quick Skill is available by writing: Shooting Jack Powers, Daisy, Rogers, Arkansas 72756.)

Of course, you can use any air gun for trying instinctive shooting, but you will find most models have short stocks which are designed just for small youngsters. The Daisy Model 2119, which comes in the kit, has an adult stock, and this makes it easier later on to convert yourself from a BB shooter to a shotgunner. It does not have sights. You do not need them as you will have your eyes on the target when shooting.

When you are ready to start shooting, select an area where you can shoot safely for at least 200 feet because much of your shooting will be up. There are two main types of targets to begin with, but later on you can work many variations in fun games. The first type of target is one put on the ground about 15 feet from the shooter. It's sta-

tionary. Five or six Dixie cups are ideal. You can tell when you hit them, and you can use them over and over. You do not need large stationary or moving targets.

The Quick Skill kit comes with two aluminum discs, one which is $3\frac{1}{2}$ inches in diameter and the other $2\frac{1}{2}$. These are for tossing and are shot at distances of 5 to 10 feet. As you learn to consistently hit them, you go to smaller targets such as washers or pennies. As BB shot will rebound from metal, the shooter and tosser, or anyone close by, should wear safety goggles. If you buy copper colored shot, with a little practice you can see them when they are in the air. If you have safe clearance, sometimes you can see shot easily which are fired from an air gun held level, with the trajectory over water. It's also a quick way to show a youngster that the pellet does not shoot flat but starts dropping from gravity the instant it leaves the muzzle; the curve of the BB trajectory becomes quickly clear when fired from a level position over water.

When you first try instinctive shooting, it's easier if you will forget what you already know about shooting. Start fresh. Begin with stationary targets on the ground about 15 feet away. All shooting is done from a standing position.

You should stand erect with your feet spread apart comfortably, your body weight evenly bal-

anced on the balls of both feet. Then lean forward slightly. Keeping your head erect, bring the gun up with the butt snugly in your shoulder pocket and the left hand well out on the forearm. Bring the top of the stock, or comb, firmly against your cheek under your cheekbone. The way you fit the stock against your cheek is critical, particularly because later on you'll be mounting a shotgun in the same position. You should not dip your head to meet the stock; keep your head erect and bring the stock to the cheek.

With both eyes open, look over the barrel at about 30 to 50 feet beyond the muzzle; do not look at the barrel. Raise the muzzle about 45 degrees, keeping all body parts in the same relative position to the gun. Take the gun down and relax. Then repeat this exercise several times. The key to all shooting rests with getting the gun in exactly the same position for each shot. If the gun is to be an extension of your eyes, it has to be mounted the same way each time. Do not be in a hurry to shoot; wait until you can easily mount the gun to your correct position. Later, on moving targets, when any movement is made to follow a target, it must be made with your whole body, retaining the same gun-arms-shoulder-head relationship.

You are now ready to try your ground targets. But first, remember that shooting downward, you
(Continued on next page)

Photo By Charles Dickey

When consistently hitting ground targets, the shooter is ready to try his luck with aials—beginning with $3\frac{1}{2}$ -inch disc held by the author's stepdaughter, Ellie Theg, above. He holds a quarter for comparison. With enough practice, one can break tossed aspirin tablets. Ellie tosses disc for brother Steve, at right, then it is turn-about. The two always don safety goggles.



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tend to shoot *over* a target; when you shoot up at a tossed target, you tend to shoot *under*. Hold the gun at port arms. Then mount it to your cheek with the barrel level. Then raise the barrel to about 45 degrees. You are now ready to put the muzzle on the *bottom* of a target cup and shoot. From the elevated position, bring the muzzle down in a firm, positive way, with your eyes focusing on the bottom of a cup.

As quickly as your eyes focus on the bottom of the cup, shoot! Don't pause. Don't think. Don't try to line up anything. Just shoot and don't worry about whether you hit the cup or not. You are trying to learn technique at this stage, not shooting for record. Don't count hits.

If you are holding your gun in the correct body relationship, when your eyes reach the bottom of the cup the gun muzzle has to be pointed at the cup. Shoot. Don't wait.

Elevate your gun again, after cocking. Shoot the *next* target. Don't shoot at the same target over and over or you will start trying to make conscious corrections. Your job now is to train your subconscious, not shoot for score.

If you have six ground targets lined up, you will probably hit from one to three on your first relay. Take a breather and set your targets up. Then go through the relay again. Don't consciously look at the gun barrel when the gun is mounted. Focus your eyes on the target and concentrate. As quickly as you swing down from the elevated position and your eyes focus on the bottom of the cup, pull the trigger.

When you go through this repeatedly in a

deliberately positive manner, quickly but without rushing, your subconscious will take over the computations. If you pause or balk, your conscious mind takes over and spoils everything.

When you are getting ready to shoot, starting from port arms position and going to the elevated position, you should talk to your subconscious. Say to your inner will, or command it, "I am going to hit that cup!" It helps if you say it out loud, but most people won't do it because they are afraid someone will laugh. So, say it to yourself. You can train and will your subconscious mind. Remember that it reacts better to positive thoughts. Think positive. You have to believe. You can talk yourself into hitting targets!

You can also talk someone else into hitting targets. Later on, after you're a hotshot, you'll be working with some kid. He's worried about how many targets he hits, not about learning technique. As with any of us learning a new skill, he is worried that he will not do well in front of others and someone will laugh at him. In this negative state of mind, his subconscious does not work well. You build his confidence by repeatedly telling him he will hit the target.

You should go a step further. Make the youngster shout as loudly as he can, "I am going to hit it! I am going to hit it!" The shouting, which he does easily and well, releases the nervous tension he has built up. By shouting a positive statement, he begins to think positive. He will immediately start shooting better.

The practice sessions should be relaxed, with frequent rest periods. If you work too long and hard at one time, you will get tense and begin

Photos By Steve Theg



Successful instinctive shooting depends on mounting the rifle in the same position each time. Ellie's coached on this point below, with drinking cups as targets, and at right, using playing cards hung upon a cord with clothespins. Both of these targets are durable, portable, and register hits visibly. Caution: you should think of safety first and select good backstop, or shoot on open spaces.



thinking rather than concentrating. With a total shooting time of about 20 minutes, you will soon be hitting five out of six cups.

At this stage, you may want to substitute smaller targets such as marbles or walnuts or cork floats. You'll quickly be surprised that going to a smaller target makes little difference. It's almost as easy to hit them as the larger targets.

With a little success on the ground, most shooters are anxious to go to tossed targets. I think they should wait until they have had three or four short ground sessions and have thoroughly convinced themselves that shooting instinctively works. The subconscious mind should be drenched with successful ground shooting before going to aerial targets.

To start with, you'll need a buddy to throw your targets. An aluminum disc from three to four inches in diameter is a good starting size. Your tosser stands a little in front of you and to the side. He should try to toss the disc uniformly, five to 10 feet high and slightly ahead of you.

Begin with the gun at the elevated position. Try a few dry runs, with no BB's, to get the picture. You'll find you have more time than you think for a target in the air. The best time to shoot is just before the disc reaches the top of its arc. The key to success is to make no conscious effort but, with correct body-gun relationship, to concentrate your eyes on the top of the disc and pull the trigger. As your eyes follow the disc, so will the muzzle. Don't consciously try to lead the target. Let your eyes and subconscious take care of it.

Now, load and shoot. Concentrate your eyes on the top of the disc and tell your subconscious you are going to hit it. At this stage, don't try to see the BB and make corrections. Keep shooting the

way you started and within 10 tosses you'll hear a satisfying ping. Take a few more shots and rest.

With your first success you'll want to switch to a smaller target. Don't. Keep practicing until you can hit the large disc eight out of 10 times before trying a half dollar. Again, you'll find that going to a smaller target makes little difference in your percentage of hits.

After you have developed full confidence while starting from an elevated position, try starting from port arms. You'll find that you have plenty of time. Later on, with enough practice, you'll be able to throw your own target and still have time to shoot accurately.

If, for some reason you don't understand, you have a bad practice session on thrown targets, don't keep hacking at it and trying to analyze it. Go back to your fundamentals by starting all over with ground targets and building up your confidence again. Have someone check your gun position. Not mounting the gun exactly the same way each time is the main reason for missing.

Successful instinctive shooting is a matter of faith. You must have faith in the system and yourself. How expert you want to become depends mostly on how much you want to practice. You can go from tossed quarters on down to aspirin tablets. If you really want a challenge, walk through a grass field and try taking grasshoppers on the wing. It *can* be done.

Your practice with a BB gun will pay off when you go afield with a shotgun for doves, quail or waterfowl. Be sure to practice with the shotgun before going hunting. Don't try your *first* instinctive shotgun shooting on game. It takes a little clay target shooting to convert from BB's to a shotgun.

When you get to the dove field, remember to keep your faith. You have to believe. ●



Photo By Jim Reed

North American Wildlife Policy

THE WELFARE of wildlife depends on what happens to its habitats. Thus its future should be planned in a framework of policies for land and water. In the not-distant future, we may expect congressional action on a comprehensive national land-use plan. We urge that such a plan for the United States embody several features of far-reaching significance:

The third of our area that is public property should remain so. It is the estate of many generations, to which values will steadily accrue.

The remaining public domain should be managed with greater attention to its multiple benefits, including recreation.

A national zoning of uses should eliminate urban, industrial, or other encroachment on fertile soils, prime grazing lands, productive forests, flood-prone areas, and a wide range of aquatic sites.

Great scenery and our declining natural environments should have protection from impinging uses.

In planning ahead, we must assume that basic decisions along these lines will be made in the

public interest. They will open important opportunities to improve the status of wildlife.

Agricultural lands

In a recent 17-year period, American farms declined in number by two and one-half million, acres harvested declined by 34 million, farm employment declined by 5 million, and the yield of crops increased by 37 percent! Since the wildlife policy report of 1930, the tractor has replaced the horse and released more than 60 million acres from the production of feed. At least an equal acreage is now withdrawn annually to reduce the production of surplus crops.

These changes affect wildlife both favorably and adversely. On farmland, wildlife is largely a by-product, and its status is tied closely to economics and the intensity of land use.

Big-business farming

In regions characterized by extensive, continuous areas of highly productive cropland, agriculture has become a specialized industry. The cropping pattern features, literally, square miles of monocultures—commonly corn, sorghum, wheat, soybeans, or cotton—worked by costly equipment. Heavy use

of fertilizers and pesticides is the rule. Land leveling, drainage, cover removal, and extensive fallowing or fall plowing produce a landscape almost totally wanting in the habitat diversity needed by most birds and mammals.

On the fringes of such regions, or where uncleared stream bottoms intrude, grain and hay fields contribute to the production of pheasants and other wildlife; they may be valuable feeding areas for migratory waterfowl. But in the face of high cash-crop values, no general recommendations can be made for devoting space to the cover that is the most obvious habitat deficiency for many kinds of wildlife. As they are at present, the most valuable agricultural soils of the continent are largely unavailable for the management and use of wildlife.

The future of the great monocultures is uncertain, since they are ecologically vulnerable. There are signs that crop interspersion may have values in the biological control of pests. Rotations may be necessary to the long-term maintenance of soils. Lands withdrawn from cropping certainly would have greater public value if seeded to vegetation serving the range of conservation needs. There may yet develop a land-use design more favorable to wildlife, and management authorities should be prepared to take advantage of it.

Diversified Farming

Fertile soils have long been recognized as having high potential yield of living things. Extensive conversion of the eastern deciduous forest into farmland favored the spread and increase of many birds and mammals, including those Leopold called "farm game". The same process reduced big game and other creatures requiring large woodlands.

During the thirties, the Soil Conservation Service began promotion of their conservation farming system, which has been particularly significant to wildlife in regions of irregular topography. Individual farm and ranch plans provide for cropping according to land capability through contour farming. The system involves strip-cropping, stubble mulching, and other practices, and it produces edges and a mixture of vegetation types that favor most farm wildlife species. The needs of erosion control result in managed problem areas and uncultivated sites. On these, perennial wildlife cover can be planted or allowed to grow through natural succession.

The bulk of our farmlands grow a diversity of crops. With the land-use plan as a basis, an owner can manage wildlife as intensively as he wishes. Plantings of shrubs and conifers can be used on sites appropriate for hedges, windbreaks, field

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Photo By U.S. Forest Service

America's wetlands, left, coastal and inland, are said to be most endangered wildlife habitat type, in addition to being the most productive sites on earth, particularly as shellfish and marine fish nursery grounds. The loss this century to drainage: forty million acres. Since the 1930's, diversified "conservation farming" has benefited farm game species like deer at right, but some controversial forestry practices such as clearcutting and monocultures warrant serious restudy.

Part II



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borders, and "odd area" coverts. On most farms operated for profit, the best policy for a farmer is to allow natural woody cover to become established and to tolerate it where it is not in his way. Wildlife management and beautification are issues of growing importance on the small "residence" farms of city workers. In nearly all rural areas much more could be done to improve habitat and to make wildlife more useful to people. A greater promotion effort—one that would bring farmers the help of true expertise in this field—would pay major dividends if carried out cooperatively by wildlife and agricultural agencies of states and the Federal Government.

Our outstanding example of the manner in which a wildlife management practice can catch on is represented by the two million farm ponds on private lands of the United States. This program has even greater potential for the future, as additional ponds are built and regional fish management methods are refined. The landscaping of pond sites for homestead values and wildlife cover has been generally neglected and offers state agencies excellent possibilities for developing working relationships with farmers.

Challenges in Farm-Wildlife Management

Urgent problems in agricultural lands demand more research, technical assistance, legislation, and administrative attention. They involve both resident and migratory species. Solutions frequently will require cooperation among several agencies:

Trespass control. Good game lands attract hunters. With a few of those hunters come illegal entry and property damage. We should build on the important pioneering work in some states to develop more effective cooperatives

and regionally adapted plans for protecting the rights of landowners in heavily populated areas. Incentives for managing wildlife. Attractive means of compensating farmers for habitat improvement are needed. Practices beneficial to wildlife should qualify in agricultural subsidy programs, where they have achieved only slow recognition. Wildlife cover and food plantings, specified by biologists, should be incorporated into planning for land and water areas retired or set aside from cropping.

The plans of soil conservation districts and watershed programs need greater input by state biologists and wildlife extension specialists. On farms, wildlife habitat development integrates naturally with erosion control and beautification practices.

Damage to field crops. Wildlife administrative agencies must assume greater responsibility in the form of technical aid, material support, and insurance programs.



Photos By Gene Smith



Looking back at land use patterns, there seems to be a clear indication of a need for strict zoning nationwide, to protect public domain and get rid of industrial, urban, and other encroachment into prime land and water areas. Great scenery merits protection as well as prime wildlife habitat; it's a matter of priorities and future decision-making, hopefully in the real public interest. Designated wilderness areas should be blocked in, through the purchasing of privately owned lands, suggests the committee; thereafter, some native game which has disappeared may be reintroduced to old habitat. This is the way that wild turkey restoration works!



Photo By Lovett Williams

Forest and range

In 50 states there are 754 million acres of forest land, of which two-thirds is available for the harvest of wood products. Of these commercial forests 136 million acres are in public and 364 million in private ownership. In the contiguous states, 69 forest or forest-grassland types are recognized. This great segment of the national out-of-doors supports wildlife in wide variety. It receives increasing recognition as a reserve of recreational open space. Management for multiple uses has made a good start in national and state forests. However, properly balanced land management is an objective that must be pursued far into the future.

Of public grazing lands in the United States—some 243 million acres—about three-fourths is administered by the Bureau of Land Management as unallocated public domain. Use of these lands is still largely under the domination of local stock-raising interests. Within its responsibilities the bureau has made significant progress, but recreation and wildlife management need much more attention on these public properties. The program requires greater agency authority and funding, which we strongly advocate.

Wildlife in the cutting cycle: Timber harvest creates openings and sets plant succession back to ground vegetation and brush stages. In many forest types these pioneer associations are essential habitat for wildlife. In degree, opening the tree canopy leaves conditions comparable to those produced by such natural disturbances as fire, wind, and avalanche. All stages of growth are used by some species of birds and mammals. A frequent require-

ment is for a combination of several stages—the intermixture that means productive edges. Sometimes these conditions are present in mature forest, notably in certain northern types, where open stands of conifers develop a vigorous understory. There are places where cutting is disadvantageous to wildlife.

At issue in the management of timber and forage is stability of the watershed. This is obviously critical to the water-yield value. In addition, marshes, ponds, and beaver works in every stage are habitat for many creatures. The viability of streams is greatly dependent on adequate forest and ground cover. Stream destruction also takes other forms, such as mining for gravel or gold, or clogging with slash.

The management of timber, grazing, wildlife, and people requires an integrated plan for individual forests. Cutting practices have been controversial, and experimentation must continue. Common needs of wildlife suggest the direction of management in appropriate woodland types:

Any clearcuts should be small.

A good mixture of age classes and species is desirable.

Fruit- and mast-bearing trees and shrubs should be retained in stand improvement.

Good hollow trees should not be destroyed.

A border of trees should be left along waterways, and streambeds should be undisturbed.

Piled cuttings should be left unburned.

Fire in forests and grasslands: Wild fires can be hugely wasteful. But planned burning is essential to the maintenance of certain habitats and to the wildlife they support. Research has shown the need for prescribed surface fires in perpetuating many western conifer types—including areas in designated wilderness. In these we court disaster by fire suppression for long periods. Instead, frequent "gentle" burnings in imitation of the natural pattern must be a part of management.

Fires played an essential role in preserving most of our primitive grasslands. Where natural grasslands are to be maintained—including all types of prairie—burning usually is required to retard woody plant invasions and rejuvenate native grasses. It should be generally recognized that properly controlled burning is essential technology in managing many kinds of vegetation and the wildlife that depends on them.

Wildlife and grazing: Historically, around the world, natural vegetation pastured by livestock has been overused and depleted. In North America this condition is being improved as private owners profit from technical assistance and as public agencies get more authority and backing in meeting their broad responsibilities.

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Our problems have been particularly acute on arid rangelands, where carrying capacity for livestock has often been overestimated. Rates of stocking, established by tradition or legal allotment, have been gradually reduced, but not enough to prevent substantial deterioration of the range. Wildlife habitats have been depleted correspondingly. Strong corrective legislation and administrative action are needed.

There are large areas of the Southwest that should not be grazed at all. Originally these lands varied from desert shrub to grassy savanna, and some have been converted by heavy grazing to impoverished brush country. Often their production of livestock is insignificant, but the potential for wildlife and recreation may be much greater. Well-situated private owners are realizing good returns from the sale of hunting privileges, and on public lands many kinds of outdoor uses are increasing. More intensive management can enhance these values while restoring lost quality to vegetation and soils.

Well-managed natural rangelands are productive of wildlife—often more productive than grass-brush associations untouched by livestock. Small animal life requires a winter carry-over of adequate cover and seed-bearing plants. Proper rates of stocking by domestic animals and big game will produce more animals per unit area than if either were used alone.

On the other hand, wildlife needs particular consideration in land-treatment projects that may result in extensive grass monocultures. The reservation of critical areas from such operations as sagebrush removal can contribute to the interspersing of vegetation types, as will the use of a variety of grasses and shrubs in developing the new range.

Wildlife problems of the western range that have

been least satisfactorily handled involve the ecology of rodents and rabbits—their relationship to grazing and to the coyote and other predatory species that feed upon them. Research has made some headway, but more facts are needed for a new appraisal of the most basic factors in long-term management.

Waters and wetlands

This report can do no justice to the manifold problems of our continental waters. We take note of three that are great issues of the day or have important wildlife implications for the future:

Pollution: In one form or another, pollution is almost universal. It is the greatest limiting factor to the health of aquatic life. Our penalty in declining fisheries and lost recreation is incalculable.

Most insidious for a wide range of organisms is the accumulation in our waters of many kinds of highly stable toxicants. Agricultural uses of persistent pesticides continue at a high level. We commend efforts now being made to phase out such compounds. Solving world problems of food production or disease control does not require relentlessly carrying on with substandard practices. We must find better ways to accomplish the same objectives.

Like technology and population, pollution often builds at geometric rates. On small waters, inland seas, and world oceans it challenges states and nations to action. We have only begun the huge task of setting standards and finding means of meeting them. The commendable work now in progress must be accelerated in every possible way.

Rivers and floodplains: The artificializing and overdevelopment of North American river systems are proceeding at an annual cost of hundreds of millions. Yet the damage toll continues to rise in floodplains progressively built up under the encouragement of government policy. As thousands of reservoirs receive their yearly deposit of silt, we

add to the huge backlog of economic and hydrologic problems to be faced by generations ahead.

Most of our remaining streams should be left unaltered. Bottomlands should be allowed to perform their natural functions as flood channels and silt-catching overflow lands. Without major investment they can serve usefully as forests, parks, and scenic avenues of wildlife habitat. Far-reaching and basic policy changes are needed.

Wetland conservation: Marshes, swamps, and wet areas of North America can be described realistically as our most endangered wildlife habitats. A national survey indicated that in primitive times the 48 contiguous states contained 127 million acres of these wetlands and shallow waters. They were a major habitat of migratory waterfowl and local populations of birds and mammals. Coastal wetlands and estuaries are recognized as the indispensable nursery ground of fin and shellfish resources. In terms of their yield of living things, these probably are the most productive sites on earth.

Largely within the present century, more than 40 million acres of the continent's best aquatic habitat has been lost through drainage and flood prevention works. Government subsidies to agricultural programs have been directly responsible for much drainage, ditching of natural stream channels, and destruction of bottomland wildlife cover. The reduction of wetland habitats has reached a critical point, and we recommend several steps as the beginning of a constructive program for the future:

There should be a national moratorium on the

payment of subsidies that result in a major loss or degradation of aquatic habitats.

In recognition of the valid interests of landowners and the general public, appropriate means should be found to pay farmers, or provide tax relief in lieu of rent, for the maintenance and restoration of wetland wildlife habitat. This should be a cooperative program utilizing the resources and expertise of agricultural and wildlife agencies at federal, state, and local levels.

Opportunities should be explored for creating or restoring water areas along rights of way of federal and state highway systems and on public lands generally.

Additional wetland units should be established in federal, state, and provincial wildlife refuge systems. In urban parks and greenbelts the development of ponds and marshes can bring spectacular concentrations of waterfowl close to the viewing public during migration seasons. The rapid deterioration of estuarine resources through pollution and development needs greater state and national recognition. Essential surveys and studies should be intensified and zoning restrictions applied pending the development of long-range plans for protecting and improving these important coastal environments.

This committee commends the adoption by states of programs to zone and control the use of floodways, riparian lands, and aquatic sites.

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Photo By Gene Smith

Wild fires can be grossly wasteful, but planned, controlled burning, seen above left, is vital to the upkeep of certain habitats and the wildlife they support. In some forest types, too, multiple use is gained as timber and its by-products are harvested within programs for planned land use for hunting, other recreation, and commerce. For other habitats, these would be incompatible—such as in smaller tracts more suited as parks and in marshes with the bordering lowlands, right, that should stay in natural form.



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Wilderness

This word has various meanings reflecting the values sought by people in relatively unaltered areas of land and water. This committee supports a strong wilderness preservation system, with its many wildlife-related benefits. Wilderness has basic environmental and social values, not all of which can be expected in the same area. Under appropriate conditions these include:

Opportunities for the scientific study of life communities and the processes by which natural ecosystems are renewed. These are the most complex systems of the universe as we know it. Our knowledge of them is in an embryonic stage, and there is application for all that can be learned.

The preservation of species, especially the perpetuation of natural gene pools unchanged by human uses. Of particular value are completely protected areas large enough to support self-contained populations of native carnivores and the plant-eating animals they must prey upon. Recreational experiences featuring the primitive scene, solitude, and communion with nature.

In practice it will often be possible to restore a "damaged" wilderness to high standard. Native animals that have disappeared may be reintroduced. The effects of minor grazing or forest cutting can be erased, over time, by plant succession. Fire and other natural disturbances should be allowed to initiate new cycles of plant and animal life, as they did before the coming of modern man. The capacity of life communities to regenerate enlarges the possibilities for wilderness in a wide diversity of environments that should be included in the system.

For all of our wilderness a compromising condition must be accepted: In this age of technology the authenticity of a primordial ecosystem probably cannot be total. The presence of environmental contaminants and exotic plants and animals is nearly universal.

For guarding and upgrading the quality of designated wilderness we recommend several policies and practices:

The areas should be blocked in as rapidly as possible through acquisition of privately owned lands.

Back-country recreation areas should be established to relieve the growing pressures on



Photo By A. D. Aldrich

Photo By Wallace Hughes



The "artificializing" of American waterways is most expensive and damaging, the committee says, yet it continues, at the encouragement of government policy. Recommendation: Leave most of the remaining streams unaltered, a guideline which can apply equally well to swamps and marshes which charge underground water supplies. The Green Swamp, above, in south central Florida, is imperiled water recharge and detention area that ought to be declared of critical concern, so its function can be preserved. Such areas, as the habitat for endangered panther, right, and other species, should be inviolate—undrained, undeveloped, unpolluted, and unimproved.

wilderness. We endorse the setting and enforcement of recreational use quotas in classified wilderness.

Incompatible uses such as grazing, mining, or timber salvage should be prohibited or phased out at the earliest possible time.

In the administration of wilderness, lands and waters of every kind should be under continuing review to identify qualifying areas, especially in types or regions poorly represented in the system. Rare or endangered ecosystems should have highest priority.

Encompassing the projects and programs that may be undertaken at all levels of government, we recognize three categories of wilderness preservation. For individual areas, standards of use and management will need to be effectively publicized:

Primitive ecosystems: We may regard as our "purest" kind of wilderness the rare surviving examples of truly primitive conditions. For the foreseeable future these will have premium value for scientific research. Hence, their plant and animal populations should be free of any consumptive use, including hunting and fishing. Areas of this type can tolerate only light recreational use—commonly observational pursuits permitted by foot-trail access.

Photo By Bob Dahne



Our largest areas of primitive ecosystems are in the national parks and certain northern wildlife refuges. For the future there is need to identify and set aside areas representative of a wide diversity of unique or disappearing environments. Keeping the habitat and wild animal life undisturbed will require a uniform policy and cooperation among agencies.

Recreational wilderness: In the United States the wilderness system established by federal law in 1964 involves the national forests, parks, and wildlife refuges. The law created a procedure for setting aside largely unaltered areas for the preservation of natural features and for recreation. They will commonly be fished and hunted under state regulation. Hunting is damaging to wilderness values if it is accompanied by illegal killing of non-game animals—predators being especially vulnerable. Where necessary, special protection can be given to diminishing species by designating areas where entry is excluded, as has been done in the case of the California condor. Examples of species that will be benefitted by large wilderness areas are mountain lions, wolves, grizzly and brown bears, birds of prey, musk oxen, and desert sheep. Coastal sea mammals and birds are in obvious need of more inviolate areas that include their feeding and breeding grounds.

The standards for statutory wilderness are sufficiently broad to accommodate many new areas—some whose quality will improve with time. Lands of the public domain, administered by the Bureau of Land Management, were not recognized in the legislation, and these should be eligible for consideration in the system. The time for dedicating wilderness is short. It should be given high priority in our public land management.

Nature preservation: We regard it as particularly important in wilderness conservation that provision be made for setting aside choice sites, ecological types, and units of wildlife habitat that may not qualify in major categories. Commonly, such a unit is preserved as a result of local interest. It may be unique and of national significance, or representative of a primitive type that is disappearing—an uncut woodland, a marsh, swamp, prairie, river canyon, beach, dune, or island. Many of these landmarks have particular wildlife values as the refuge of rare species, or as rookeries, breeding sites, or seasonal concentration points.

This kind of nature preservation can be effective at any level of government or private endeavor. Provincial and state natural area systems include a wide diversity of ecological types. These constitute an irreplaceable feature of historic preservation programs. The habitat remnants support populations of declining species and communities having esthetic and educational values—even though such significant animals as the buffalo, eagle, and wolf have long been gone. ●



Photo By Evelyne Walborsky

the incredible imported FIRE ANT

MANY MILLIONS of dollars have been poured into state and federal programs in the United States to develop chemical sprays that would eradicate or control the pesky imported fire ant, *Solenopsis invicta*. All have failed. The ant continues to spread like the weeds in an uncared-for lawn, covering millions of acres in the Southern states—11 million in Florida alone, at the most recent assessment of the situation.

Although students of the problem do not agree as to the seriousness of the damage done by the annoying foreigners to crops, livestock, and wildlife, all agree that the ugly mounds filled with tiny worker ants, ready to sting anyone who disturbs their colony, are a nuisance we could certainly do without.

What is this creature like—this tiny insect that will not bow to man?

Like all ants, it is one of the most gifted of insects; a social animal living in a nest with thousands of other ants—a mother queen, young

winged queens and males, and the workers—each with a strictly defined role.

The winged male fire ants mate with the young queens on a mating flight, the mother queen lays the eggs, and the workers, who are all females, feed the queen, keep her body clean, and guard her against enemies.

The physical makeup of the fire ant is well adapted to maintaining and propagating its species. Its skeleton, as in all insects, is on the outside of the body. It is made up of horny plates, and serves to protect the small insect from injury.

Fire ants' eyesight is limited. The workers have compound eyes—a pair, made up of many small eyes crowded together—enabling them to see only a few inches ahead. But the males and queens are better endowed, having three other eyes as well, called simple eyes.

What the ants lack in sight they make up by having excellent senses of touch, smell, and taste. Their antennae, two movable, jointed rods on the front of the head, not only enable them to feel, smell, and taste, but are so sensitive that they enable the ant to distinguish its own nest from those of other ants, and to identify members of its own species.

Each joint of the antennae seems to have its own purpose, according to entomologists. If an ant loses one or more of these sections, it loses a part of its senses of smell and taste. If a greater part is

lost, the ant becomes inactive, and actually helpless.

The jaws, or mandibles, of the fire ant are large and strong, and are hinged so they can be opened and shut like scissors. They are used by the ants to cut leaves, and to dig for and manipulate their food.

Like other ants, the fire ant has three pairs of legs, which are fastened to its thorax. Each leg bears one pair of claws at the end, and the first pair has a comblike joint that is used to clean its body. The legs are so strong that, according to one authority, if a man could run as fast for his size as an ant can, he could outrun the fastest horse.

At the end of the fire ant's abdomen is its stinger. The abdomen itself contains an intestine for the ant's own food and a crop in which it stores food to be shared by other ants in the nest. When an ant is hungry, it taps the returned food-gatherer with its antennae, and the food-storing ant regurgitates a drop of food from its crop. When the drop reaches its mouth, the other ants proceed to drink it—not a very sanitary practice according to man's custom, but it serves the ants' needs most efficiently.

The development of an ant colony is a fascinating affair. As if by a prearranged schedule, a day arrives when the young male fire ants and the winged queens crawl out of the nest into the sunshine and fly three to four hundred feet into the air to mate.

(Continued on next page)

By **SABINE EHLERS**

Imported fire ants, highly social, rival honeybees for industriousness and orderliness. Amidst great excitement, the ant mound at left has been prepared for exit of winged males and queens, for occasion of mating flights which usually occur on bright sunny days. A recently fertilized queen, shown right, founds new colony in FSU biology laboratory nest, where studies of feeding techniques are under way.



Photo By Walter Tschinkel

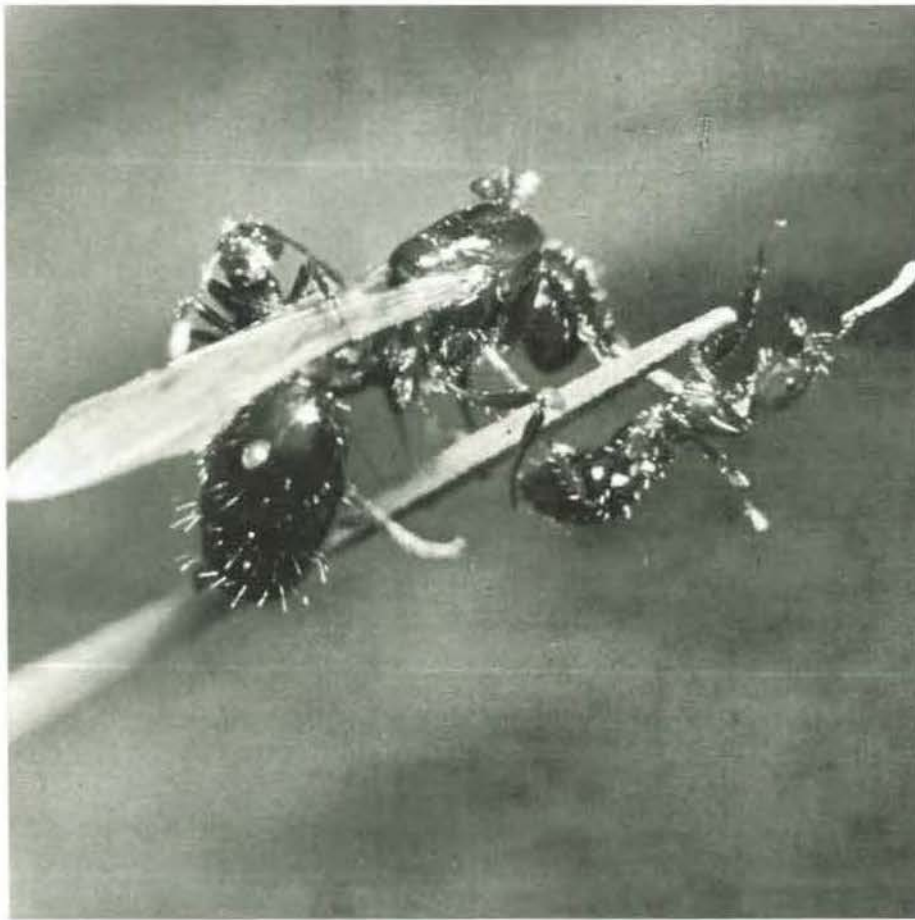


Photo By Walter Tschinkel

A queen, left, waited on by a "ground crew" of worker fire ants, is preparing to depart on her mating flight. After the mating, she will shed her wings, and enlarged wing muscles will be changed to food for larvae and young. Males die soon after mating, but the queen may live and produce up to ten years. Research might shorten her stay—and colony life—without widespread use of pesticides.

(Continued from preceding page)

They have been known to do so on a cloudy day, and even in a light rain, but usually, according to observers, the mating occurs on a sunny day.

Once in the air, each queen mates with one or more of the males, and within a day or two, the male ants die. The queens, however, live long lives—up to 10 years in some cases—and for the rest of their lives they lay eggs that will hatch into all three classes of ants.

A queen's first task, following mating and a brief rest, is to start a new colony. She breaks off her wings close to her thorax, and crawls until she finds a suitable place for a new nest. There she tunnels into the ground and digs a small room at the end of the tunnel. Sealing herself up in the small burrow, she lays a few eggs, bundles them together, and watches over them until they hatch.

Meanwhile, the powerful wing muscles inside her thorax slowly disappear and turn into fat. Some of the fat is converted into trophic (sterile) eggs, which she lays and feeds to the larvae, and some is converted into saliva, on which she later feeds the young.

After a few days, each fertile egg hatches into a tiny, white, wormlike larva. As it grows, it sheds its skin several times until, after the final shedding, it becomes a pupa. In this stage it does not eat, but begins to take on the form of a full-fledged adult ant.

After the pupa has matured, its skin splits down its back, and a tiny worker ant struggles out with the help of the queen. In a few hours it is ready to begin its lifelong chores, which keep the colony alive.

And so it goes. For the first year, the queen produces only worker ants. As she grows older, she produces winged males and females, who leave the nest, mate, and start other fire ant colonies.

The old queen remains in the nest with her workers. When she begins to age, she moves more slowly, turns a dull color, and eventually dies. The worker ants carry her body out of the nest, and usually that is the end of the ant colony. However, it has been suggested that the workers may capture a newly-mated queen who will assume the duties of the dead queen. Such colonies may last for years. These phenomena are still under study.

The newest pesticide being tried in fire ant control is Mirex, a chlorinated hydrocarbon used in a bait consisting of soybean oil, a food that attracts the ants, and pulverized corn cob, which makes it easy to apply to mounds and easy for the ants to transport, being in small granular form. Unfortunately, as with other chemical pesticides, it has done little to control the ant, but seems to be injurious to birds, fish, and other animal life, according to some of the research.

Dr. Walter Tschinkel, assistant professor of bio-

logical science at Florida State University, at Tallahassee, is one who thinks that extensive research into the nature and habits of the imported fire ant, rather than chemical spraying, may bring the solution for the control of the troublesome insects that are spreading throughout the southern part of the country, and for whose destruction there seems to be little hope.

Dr. Tschinkel came to FSU three years ago with a doctorate from the University of California, post doctoral work at Cornell University, and with teaching experience at Rhodes University, in Grahamstown, South Africa. His field is chemical communication in insects.

He explains that the present species of fire ant in the United States is a lightly colored species that arrived from Brazil in the 1930's, "How, we don't know," and soon began replacing a darker species, *Solenopsis richteri*, that first arrived in Mobile, Alabama, in 1918.

The present fire ant population spread rapidly throughout the southeastern United States, and by 1949 had infested several counties in adjacent parts of Alabama, Florida and Mississippi. Presently, Arkansas, Georgia, Louisiana, North and South Carolina, and Texas have been added to the list.

By 1965, in Florida, infestation was heaviest in the western portion of the panhandle, with mild infestation in the central and southern sections of the state.

Tschinkel and graduate student Dennis F. Howard are studying how food is transmitted in a fire ant colony. They are attempting to discover how the workers feed the queen.

"Since there are no major predators or pesticides that stop the spread of the fire ant, killing the queen would be one way of eliminating the colony," Tschinkel says. "That is the foundation of the Mirex program. The workers store the oil, take it into the nest, and the queen presumably licks off the toxic oil and dies. But there is, to date, no scientific evidence that the queen is fed on oil. It may be that she is fed on the glandular secretions the worker ants produce," he continues, "or possibly she's fed oil under some conditions and not under others. That's what this study is all about."

Dr. Tschinkel claims that fire ants are an excellent choice for such a study, since they are so numerous. He expects the research to take about three years.

According to Tschinkel, the damage fire ants do is overrated. He considers the ant more of a nuisance than a damaging pest.

"In sandy soil, there is no damage to farm implements, and bulls have been known to roll in the ant mounds without serious consequences. I've been stung at least 100 times, and so have my students," he notes.

Explaining what happens when the fire ant

stings, Tschinkel says it injects a nonprotein venom into the skin, causing a sterile pustule to develop. If the pustule is not scratched open, the white blood cells move in and remove the dead cells. However, after the initial sting, itching and burning set in, and it's a neat trick to keep from scratching or rubbing and breaking the pustule. If broken, an infection could occur, but with proper cleansing, usually doesn't.

Dennis F. Howard, in a paper on fire ants, writes, "Extreme discomfort, massive swelling, or development of . . . hemorrhagic bullae (bleeding blisters) are attributable to allergic reactions (to fire ant stings) which infrequently occur. The National Research Council of the Academy of Sciences has rated the imported fire ant below mosquitoes, sand flies, stable flies, midges, bees, wasps, chiggers and stinging caterpillars as a nuisance to man."

"In fact," Howard continues, "a small amount of work has been completed which indicates that the imported fire ant in some ways may be considered beneficial to man . . . many of the organisms preyed upon by the fire ant (e.g., weevils, termites, cutworms, and fly larvae) constitute agricultural pests. The imported fire ant has been implicated as a major predator on the lone star tick, the striped earwig and the sugarcane borer."

The spread of fire ants, based partly on the research and partly on Tschinkel's observations, seems to prove that they make their nests in disturbed land areas: overgrazed lands or recently cleared fields, for example. If the habitat is without fire ants, there will be a large number of mounds initially, he explains, because the soil has been disturbed and makes an ideal habitat for the invading ants.

"If you leave the ants alone," says the scientist, "the small colonies will disappear at the expense of the larger ones. I've seen this happen in all areas where they have been left undisturbed, although the number of ants per acre may not change very much. I see a reason for treating hay fields and farm lands, but not for the wholesale spraying of pastures and roadsides."

According to a national newspaper story, research on the extermination of the housefly by Dr. Otto Merez, assistant professor of chemistry at the University of Toronto, in Canada, has produced a chemical perfume that stops male houseflies from breeding. It is odorless to humans.

The professor says, "When male houseflies are exposed to the tiniest trace of the perfume's odor, they lose all interest in sexual intercourse. Whenever this odor is spread, colonies of houseflies will fail to reproduce, and soon cease to exist."

If Merez can kill off the fly population, perhaps Dr. Tschinkel will succeed in eliminating the fire ants in the United States.

Where there is research, there is hope. ●

The Raccoon

By GENE SMITH

FEW WILD animals are as curious, as courageous, as clean, or as mischief-minded as the raccoon, and few are as intelligent or as adaptable to a changing environment. This helps explain why coons are so common; why they're found in every habitat type in Florida, from salt marsh to city street; from river swamp to garbage dump.

There's no denying that a raccoon makes an interesting pet if gotten young (along with a permit to possess it, issued by the Game and Fresh Water Fish Commission), but as these animals mature, their gentle, playful nature fades. They can no longer have the run of the house or yard because they begin to bite harder, scratch deeper, and resent handling more and more. Since there's no reasoning with a coon, that's when the painful choice must be made by their owners: Shall we release him into the wild, cage him, or pawn him off on somebody else?

The coons would much prefer freedom, I'm sure. They're self-sufficient by nature, and would learn to live off the land in one or two easy lessons: after having missed one or two meals.

Raccoons in Florida breed from December at least into August, and probably throughout the year to some extent. Most young are born in May and June.

Some people believe raccoons produce two litters per year, but studies show only one per breeding female; young found in the winter months are just late arrivals.

The usual litter is two or three, but up to six may be born—after a gestation period of approximately 64 days. Baby coons are furred and have tiny black masks at birth, but they're blind and helpless.

Home is almost always a standing hollow tree if one can be found, but raccoons also den in logs, caves, and sometimes in or under a farm building. (They welcome nesting boxes, and nail kegs make good, inexpensive ones.)

Wherever the nest, mother raccoon protects her young from all intruders during the three weeks their eyes remain closed and the additional three weeks they remain inside the den. It is when they venture out into the world that some young are quite likely to fall prey to other animals.

Bobcats take baby coons, and so do owls, dogs, foxes, and alligators. Boar coons also kill and eat them on occasion, although the mother can usually prevent it. She will not allow a male to come near when the young are still in the nest, and she'll fight to the death to defend them afterward. If



Photo By Lovett Williams

disturbed, she will move her family to a new den, carrying each baby by the scruff of the neck, cat-style.

Raccoons eat virtually anything available in their range at any given season. They relish berries, grapes, persimmons, and other fruit, including apples; they eat flesh—of birds, rats, rabbits, fish, crayfish, mussels, salamanders, and similar animals; they feed on grubs and insects of all kinds, and on eggs, garbage, and some carrion.

In some areas, coon depredations in ripening corn are just short of calamitous. Likewise, one that gets a taste for poultry can wreak havoc with a flock of laying hens. Such a rogue will foolishly return to the same spot time after time, often killing far more than he can eat. Obviously, this type of individual animal isn't long for this world.

The forepaws of the raccoon rival the hands of man in dexterity, sensitivity, and usefulness to their owner. A clever coon can operate cabin and cage door latches, open sealed bait cans and minnow buckets, pick pockets, and remove the lids from galvanized garbage cans.

Coons can also discern between edible and inedible substances just by feel. The notion that they wash everything before they eat it is erroneous, however. They do dunk much of their food, turning it in their paws, rolling it, and toying with it, but they go through these motions when no water is near, and with inedible objects. A captive raccoon will indeed "wash" most of what he eats (or *hopes* to eat, in the case of sugar cubes) if his water dish is full, but he will also eat without benefit of water or ceremony—particularly if he happens to be unusually hungry. ●

Rifle Shopping

with a few basic guidelines you can select a real workhorse of a sporting rifle—not a temperamental, trouble-prone performer

HUNTING



By EDMUND McLAURIN

AT THE COMMERCIAL shooting galleries of yesteryear—every carnival and amusement center of any size had at least one—the day-to-day workhorses were .22 repeaters of fast and easy magazine reloading type. Typical were Remington 24 and Winchester 63 autoloaders, Winchester 90, 61, and 62 slide actions, and Marlins 39As, the latter a lever-action.

Except for the Marlin, none of these workhorses are made anymore. Their places have been taken by such modern models as the Remington "Nylon 66," Winchester 290, Remington 552, Ruger 10/22, and Browning autoloaders (the Browning auto being a modernized version of the Browning-patent Remington Model 24), and the Remington 752 and Winchester 270 slide-actions.

Similarly, there are workhorses among center fire big game rifles. Brief commentary may be helpful to you in selecting a true workhorse rifle instead of being stuck with some temperamental performer.

The lever-action Winchester Model 94 Carbine has probably accounted for more deer kills than any other sporting rifle manufactured; not because the 94 is a sensational deer rifle, but because more than 3 million of them have been sold.

Used with a 170-grain bullet, the Winchester Model 94 is all the deer hunter needs for short and medium range shots. Both firepower and reliability to back up a first shot are there, if needed.

Deer hunters, trappers, and ranchers have long loved the 94's quick, easy, smooth action, which involves only two short motions, one down and one up, to feed a cartridge into the chamber. In the West, the Model 94 has always been a popular saddle gun.

Even so, there are certain critical truths about the 94 that cannot be evaded.

First, the user is limited to a choice of either the .30-30 or the .32 Winchester Special calibers. It's one of the two or nothing if you want a Model 94!

Secondly, the 94's top ejection has caused scope mounting problems. Until the 1960s, when several new scope mounts and a couple of long eye relief scopes for the Model 94 were introduced, the only way to put a scope sight on one was to mount it in offset position in relation to the bore.

Thirdly, it is necessary to feed cartridges from the magazine tube through the action to unload the Model 94, although there is now available a magazine cut-off that locks off cartridges in the tube and temporarily prevents them from being fed into the action.

Also, the solid frame of the 94 necessitates cleaning it from the muzzle end. This is a disadvantage because any wear or damage to the rifling at the muzzle (from too frequent or careless contact with the cleaning rod) will adversely affect accuracy.

Finally, in .30-30 caliber, the Winchester Model 94 is very sensitive to variations in powder charge and bullet weight. The shooter must invariably resight his 94 if he changes to a different bullet weight or loading.

For uniform performance, deer hunters should stick to the 170-grain soft, blunt-nosed bullet, and should sight-in so that bullet impact will be about 1½ inches high at 75 yards and on the nose at 150 yards. That'll put it only four inches low at 200 yards. This practical sight setting takes maximum advantage of bullet trajectory and covers both short and fairly long range shooting.

Winchester's cutting back of the barrel of the Model 94 from its former 26-inch length to 20 inches has resulted in only a slight velocity loss from the 170-grain bullet. Impact "punch" at the target is still there.

A Model 94 in .30-30 caliber usually has the creditable ability to deliver practical hunting accuracy long after barrel wear has become obvious to the eye. Not so a Model 94 chambered for the .32 Winchester Special. Once its barrel starts to go, accuracy can be expected to fall off rapidly, and barrel life thereafter will be short.

The firing recoil of either caliber is so moderate that Winchester doesn't bother to fit the 94 with a recoil pad. One of the Pachmayr "White Line" pads will enhance the rifle's appearance, however.

Sling swivels are easy to fit to a Model 94, as are various metallic sight combinations. That of a Williams FP-94 receiver peep sight and .312M height, dovetail-size Redfield "Sourdough" or Williams white or gold bead front sight is never a mistake when the hunting rifle chosen is a Winchester 94.

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Another lever-action rifle workhorse made by Winchester has been the Model 64. The original 64 achieved widespread popularity.

This rifle was actually a revamped Winchester Model 55, as the older action was retained while changes were made in the design. Production of the Model 64 was discontinued in 1957, after about 67,000 had been made, and no new ones were to be had until Winchester resumed production last year.

The Model 64, like the 94, is made in .30-30 and .32 Winchester Special calibers. In general appearance, it differs from the 94 by virtue of its longer barrel (24 inches) and its $\frac{3}{4}$ -barrel length magazine tube, fluted stock comb, and the inclusion of sling swivels.

Many an entertainment personality would like to claim the sustained popularity that the Savage Model 99 lever-action rifle has had for more than 70 years.

The Savage Model 99 has been a real workhorse among sporting rifles. Its action is very strong; on a par with that of a well-made bolt-action. In fact, the 99's internal components are very similar. A hammerless, lever-action repeating rifle, the 99 utilizes a unique rotary spool-type magazine much like the Mannlicher-Schoenauer bolt-action.

Cartridges fed into rifle chamber cannot be fired unless the Model 99's breech mechanism is positively closed and locked and, because of the receiver's design, no powder gas can escape to the rear in the event of a defective cartridge case.

The position of the firing pin, when in cocked, ready-to-strike position, is revealed by an automatic indicator, and the number of unused cartridges remaining in the rotary magazine is likewise indicated by a visible numeral.

In other lever-action repeating rifles, use of pointed bullets can prove dangerous, as their tubular magazine loading places each bullet point against the primer of the cartridge immediately ahead. The rotary magazine loading of the Savage Model 99 eliminates this danger entirely when pointed bullets are the shooter's preference. The cartridge clip used in the 99-C version does the same job.

Most Savage Model 99's deliver far better than average hunting rifle accuracy.

Although the Model 99 over the years has been chambered for a variety of calibers—.303, .38-55, .30-30, .32-40, .25-35, .22 Hi Power, .250-3000, .300 Savage, .308 Winchester, .243 Winchester, .284 Winchester and .358—it has never been made for such popular calibers as the .30-06, .270 Winchester and .280 Remington. The rifle's short-throw action was not designed to handle long cartridges like the .30-06, .270 and .280 calibers. To alter the

Model 99 to handle them would be almost equivalent to designing an entirely new rifle.

It was in an effort to give the shooter something in the nature of a .30-06 that the extremely short neck case .300 Savage caliber cartridge was developed, and it quickly earned a reputation as a one-shot deer killer.

Current .30-06 compromise is Savage's chambering of the Model 99 for the stubby .308 Winchester cartridge, sporting version of the U. S. Army T-65 or 7.62mm NATO cartridge. Ballistics of the .308 compare favorably with the .30-06. Light-skinned game animals shot with the .308 are killed every bit as quickly as with a .30-06, yet the .308 cartridge is half an inch shorter, and its firing recoil less punishing.

Besides the .308 caliber chambering, the Savage Model 99 can be had in choice of .243, .250-3000, and .300 calibers.

There are five presently manufactured versions of the Model 99; the 99-A and 99-E with 20-inch barrel, and the 99-C, 99-F, and 99-DL with 22-inch barrel. The 99-A comes in choice of all four available calibers, but the 99-C and 99-DL can be had only in .243 and .308 calibers, and F and E versions only in .300 Savage, .243 Winchester, and the .308.

My personal preferences are the Model 99-C when using metallic sights (although the 99-C is also adaptable to scope use), and the 99-DL, with its higher Monte Carlo type comb using scope sight exclusively.

None of the versions come with attached rubber recoil pad or with sling swivels and sling. A Pachmayr "White Line" permanent pad can be fitted, or one of Pachmayr's handy slip-on pads used. Sling swivels to fit specific catalog listings can be had from Williams Gun Sight Company, Davison, Michigan 48423, along with leather sling.

There are several good peep sights that can be used on the Savage Model 99.

The Williams FP-99, for one, mounts beautifully and sturdily on the receiver, and in most cases can be used in combination with factory-furnished front sight. The Lyman 57 is another modern peep sight that can be used.

Old model 99's can logically be fitted with a Redfield 70 tang sight, an old Lyman No. 1 tang sight, or a Lyman 56S receiver peep sight—models seldom seen now, but still obtainable from Original Sight Exchange, 23 S.W. Route 202, Paoli, Pennsylvania 19301.

When using a receiver or tang peep sight on a Savage Model 99, the factory-furnished, open-style rear sight should be removed and its dovetailed slot fitted with a Lyman No. 16 folding leaf sight. Should a really serious field mishap ever put the receiver sight out of commission, the peep sight

slide can be removed and the folding leaf sight turned up and used open sight-style in combination with the front sight.

The Redfield Jr. and the Williams TM-99 scope sight mounts give low and central, overbore mounting of a scope sight without interference of receiver ejection of empty cartridge cases. Both mounts are very good.

The Marlin 336 lever-action is another workhorse big game rifle. Like the Winchester 94, it has been around a long time—first as the Marlin 1893. With minor changes the Model 1893 became the Model 36, and further redesigning—particularly change from square to round bolt and stronger receiver—resulted in the Model 336. In 1955, Marlin started fitting the Model 336 with Micro-Groove rifled barrels, featuring numerous shallow bullet stabilizing grooves rather than the deep Ballard type rifling Marlin long used.

The rifle's stock has the rare quality of fitting most shooters comfortably, using metallic sights. With a scope, a lace-on style comb height pad may be needed to bring the comb height and face supporting surface up to the raised line of sight.

For fast follow-up shots the Model 336 can be reloaded with a quick flick of the hand without taking the rifle from the shoulder. Slide ejection of empties is out of line of vision, even for a southpaw.

The solid top steel receiver incorporated in the Marlin 336 has given the rifle a good reputation for strength, and the almost wholly enclosed round bolt further strengthens the action.

The Marlin Model 336 is presently made in two basic styles—the Model 336-C, with pistol grip style stock, in .30-30 Winchester and .35 Remington calibers, or in straight-grip style stock in .30-30 Winchester caliber only, as Model 336-T. Either version can be easily fitted with a low-mounted scope sight by utilizing a Weaver No. 63 one-piece base or a Williams TM-36 mount. An excellent metallic sight combination is a Williams FP-36 receiver peep sight and a Redfield "Sourdough" front sight.

My personal preference is the Model 336-C in .35 Remington caliber, fitted with 2½-X low-mounted scope sight, Pachymar recoil pad and carrying sling. The combination meets all the requirements of the rifleman who hunts thick timber or the Florida scrub in quest of deer or black bear.

Some of the Marlins come from the factory a little rough of action, and require smoothing at critical points. Fortunately, the Marlin 336 is simple to disassemble for smoothing of rough spots with a Dremel tool and chucked-in abrasive polishing point. An alternative is to remove the ejector and

flood the action with a mixture of fine grade valve grinding compound and oil, or Bon Ami and oil, depending on the degree of polishing required. Just be sure to thoroughly wash and brush out all deposits with mineral spirits before reassembling the action.

For many years, the Winchester Model 70 bolt-action center fire rifle was rated by experts as the best bolt-action big game rifle made. Users loved it. Even the fine Model 721 bolt-action Remington introduced in 1948 couldn't challenge the Winchester Model 70 in hunter acceptance. Popularity was helped by the Model 70's availability in a variety of calibers and barrel weights. Hunters the world over found the Winchester Model 70 one of strength, reliability, good fit and balance and fine accuracy, whatever caliber chosen. From 1936 to date, the Winchester Model 70 has been a dependable workhorse among big game rifle models.

It might still have been unchallenged had Winchester not, with the objective of cutting manufacturing cost, made certain changes in the early 1960's.

Instead of machine rifling barrels as done previously, Winchester started rifling Model 70 barrels by the hammer-forge process. To the credit of Winchester, the new method produced very smooth, highly polished, accurate rifle bores. But the old powder gas escape hole in the bolt of the original Model 70 was left out and, instead, the cocking piece protectively covered with a stamped metal shield. This crude innovation was somewhat balanced out by streamlining and improving of the original bolt.

But on stock design revamping, Winchester initially erred. The new version appeared with a more flattened fore-end, an incorporated cheek-piece so thin that its practical value was questionable, and a redesigned grip that was too small and too short for comfortable handfit. For the handsome, very practical hand-checkering formerly given Model 70 stocks, Winchester substituted inverted, pressed-on stock decoration. This type does not provide the sure finger-gripping surface of fine-lined hand checkering.

The net result was a dismal howl from shooters long in love with the original Model 70—so loud in volume, and from so many regions of the world, that Winchester's engineers promptly worked up a more acceptable modernized version.

The presently marketed standard Model 70 looks more like the old Model 70, although shooters, whose first love was the original model, still find fault and seek pre-1964 Model 70 manufactures among available used guns.

The current model comes in various grades and
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weights, and in caliber choice of .222 Remington, .22-250, .243 Winchester, .25-06 Remington, .264 Winchester Magnum, .270 Winchester, 7mm Remington Magnum, .30-06 Springfield, .308 Winchester, .300 Winchester Magnum, .375 H&H Magnum, or .458 Winchester Magnum.

But in years past, the Model 70 could be had in .22 Hornet, .220 Swift, .257 Roberts, .300 Savage, .358 Winchester, and .35 Remington calibers. Rifles of these chamberings still exist.

The unfavorable publicity and shooter unhappiness that resulted from Winchester's experimenting with the design of the original Model 70 no doubt helped the Remington Model 700 bolt-action get off to a fine start. It was introduced in 1962.

When attention turned to the 700, it didn't take long for the classy rifle to sell itself. It is now recognized as a real workhorse among big game rifles. Its action is very strong; three rings of solid steel—bolt head, barrel, and receiver—surround a chambered cartridge, making the Remington Model 700 one of the strongest bolt-action rifles made.

Remington engineers went all out to give the Model 700 eye appeal besides practicality. It is a handsome rifle from muzzle to butt-plate.

The 700 is made in 17 different calibers, and in ADL (standard) and BDL (deluxe) grades. And for the left shoulder shooters, special left-hand actions are available in certain calibers. All regular models are factory drilled and tapped for both metallic and scope sights. The Model BDL "Varmint Special", made in .25-06, .222, .223, .22-250, 6mm, and .243 calibers, comes equipped with scope bases. The other Model 700s require the shooter to effect his own scope sight base installation.

The Remington Model 700 really deserves to be fitted with a high quality scope sight. Only then can its potential effective range and fine accuracy be fully realized and appreciated.

But for users who prefer metallic sights, the Model 700 can easily be fitted with a Williams FP-70-AP, Lyman 48-JS or 57-JS, or Redfield 75 receiver peep sight, matched to a front sight of proper height.

Similarly, where not factory furnished, all models can be fitted with sling swivels.

Assuredly, Remington Model 700 bolt-action rifles are going to be around for a long, long time. They're *that* good!

GI's returning home from World War II brought back a consciousness of fast firepower in shoulder arms, and often sought it in new sporting rifles.

For them, Remington produced the fast-firing, slide-action Model 760 big game rifle and the Remington Model 740 autoloader, the latter now known as the Model 742.

In creating the new rifles, Remington's designers realized that the actions of the old Remington Model 141 slide-action and the Model 8 autoloading big game rifles were too outmoded to be salvaged. They designed entirely new models—lighter and more streamlined—and chambered them for already popular calibers. The rifles found immediate acceptance.

The Model 760 can be considered the workhorse of the two. Its action is manual and therefore more dependable under all hunting conditions than the mechanical functioning of an autoloader.

The clip-loading, pump-action Model 760 has surprising fire power and accuracy. Follow-up shots—if needed—can be made in split-second time, largely because the 760's action is so mirror smooth, and because the twin cartridge case feeding and extraction bars eliminate fore-end twisting or binding as the rifle's action is worked.

You can get the Model 760 in either standard 22 inch barrel length or in shorter 18½ inch carbine style. The last can be had only in .30-06 and .308 calibers, whereas in the 22-inch barrel version, choice of 6mm Remington, .270 Winchester, .30-06, .308 and .270 Winchester calibers can be had.

Remington once chambered the Model 760 for the .35 Remington cartridge, and shooters who like that caliber wish to see the Model 760 again produced in that chambering.

A scope can be fitted to a Model 760 within minutes, as factory drilled and tapped screw holes are spaced to fit most American makes of scope sight bases. The top-of-receiver-mounting Williams TM-760 scope mount, Redfield Jr., and Weaver combinations of correct base and scope holding rings, are much used.

Rival to the Remington 760 is the Savage Model 170 slide-action big game rifle, made only in .30-30 Winchester caliber. Place these models side by side and one is immediately conscious of receiver contour similarity. However, notable differences are apparent in stock and fore-end design, the Savage stock having a Monte Carlo comb and a fluted fore-end.

The Savage Model 170 is a dependable workhorse for hunters who want .30-30 caliber chambering in a rifle of slide-action type. The Model 170 operates fast and, like the Remington 760, is practically trouble free.

For scopes, the Savage Model 170 takes a Weaver No. 62 one-piece base and holding rings, or a Williams TM-760 scope mount and rings as made for a Remington Model 760.

Similarly, most receiver peep sights made for the Remington Model 760 will also fit the Savage 170.

Given opportunity, any of the described workhorse big game rifles—used correctly—will put game on the table. ●

how to make a frog gig

By LAURENCE ROSSIGNOL

AS AN INVETERATE do-it-yourselfer, I was more than casually interested in a recent conversation between several wildlife officers regarding the effectiveness of the type of gig used by commercial froggers in Florida. Further contributing to my interest was my appreciation of the fine table quality of bullfrog legs.

With a mental picture and a crude sketch, I set out to build a custom frog gig. Very limited tools and materials were required, with the only specialization needed being about five minutes worth of welding.

The tools required for this project are a hacksaw, an electric drill, a $\frac{1}{8}$ -inch bit, pliers, screwdriver, hammer and tapered punch.

Materials needed are:

- A 6-inch length of $\frac{1}{2}$ -inch electrical conduit
- 4 size 11/0 Mustad fish hooks
- 1 flat washer, $\frac{3}{4}$ -inch outside diameter
- 4 machine screws ($\frac{1}{8}$ x $\frac{3}{8}$ -inch), with nuts and washers
- 1 machine screw ($\frac{1}{8}$ x 1 inch), with nut and washer
- A long cane pole for a handle

Following these step-by-step procedures, the gig should be finished in an hour:

1. Drill $\frac{1}{8}$ -inch holes completely through the tube $\frac{1}{2}$ -inch from one end and $2\frac{1}{2}$ inches from the same end; rotate the tube 90 degrees and drill two more sets of holes at these same measurements. Now drill a $\frac{1}{8}$ -inch hole completely through the tube 1 inch from the opposite end.
2. Using a hacksaw, split the conduit twice for a distance of $3\frac{1}{2}$ inches, from the end with the lined up holes. The cuts must be 90 degrees apart and evenly spaced parallel between the holes.
3. Insert the blade of a screwdriver at the base of the cuts and pry the four "legs" of tube approximately 3 inches apart.
4. Using pliers, bend $\frac{5}{8}$ -inch of the ends of the legs in toward the center of the tube.
5. Still using pliers, grip each leg approximately $\frac{3}{4}$ -inch above the base of the cut and bend it

toward the center until the upper ends of all four legs are touching at the corners.

6. Braze the $\frac{3}{4}$ -inch washer in the center of the legs.
7. Straighten the four Mustad 11/0 hooks by peening. Do not attempt to bend the hooks. Partially open the eye of each hook by driving the tapered punch through it.
8. Insert the eye end of each hook through the four holes in the bent ends of the legs, then close the hook eyes with pliers and fasten through holes in lower portions of legs, using the $\frac{1}{8}$ x $\frac{3}{8}$ -inch machine screws with their washers and nuts. Make sure the hook barbs are turned inward on the gig.
9. To make and fit the handle, cut off the cane pole at the joint that just fits inside the conduit. Slide the gig on the pole until the end of the pole is touching the bent legs where the washer was brazed on. Drill through the pole and fasten the gig to it with the $\frac{1}{8}$ x 1-inch machine screw and nut.

You now have one of the best frog gigs around—and much cheaper than the nearest thing to it made commercially, that is, if you're like me and your labor is cheap.

All you need now is a headlight and a pond full of bullfrogs. You'll notice in the photograph that my headlight is homemade from a discarded hand lantern mounted on an inexpensive "skull cap." Mount the light so the whole thing isn't front heavy and it's a lot more comfortable than the conventional store-bought headlight with the elastic band around the head.

Find your own pond full of frogs. ●

Photo By Laurence Rossignol



Evolution of a homemade frog gig is clearly shown, left to right, in photo. Easy-to-get materials plus author's 9-step instructions make constructing a gig such as one shown, an hour's project. Author made headlamp as well.



CONSERVATION SCENE

Hunting-Fishing Day

CONSERVATION GROUPS and sportsmen's clubs across the nation are busy planning for the second National Hunting and Fishing Day celebration scheduled for Saturday, September 22, according to the Wildlife Management Institute.

NHF Day began in 1972 to acquaint more people with resource conservation activities and benefits and responsibilities of outdoor recreation. Some 3,000 organizations held NHF Day programs and open houses last year, with total attendance exceeding 4 million people. The number of programs is anticipated to be far greater in 1973, with total attendance expected to top 15 million. The emphasis this year will be on shopping center and parking lot programs.

In signing the second annual NHF Day last April, President Nixon called on all Americans to take part in the 1973 activities being sponsored by local conservation and sportsmen's groups.

There is little time left, but clubs interested in obtaining help for planning NHF Day programs can obtain an action manual for \$2.00 and a kit of materials for \$3.00 from NHF Day, 1075 Post Road, Riverside, Connecticut 06878.

Southern Deer Foods

A BOOKLET identifying some 50 browse plants which furnish food for deer in southern forests has been reprinted and is available from the Southern Forest Experiment Station of USDA's Forest Service.

The 78-page publication has close-up photographs of each species and tells where the plants are found, their normal growth habits, seasonal preference by deer, parts taken, and tolerance to browsing. Also included are suggestions to help land managers grow more browse.

Browse makes up the bulk of the diet for white-tailed deer, the booklet points out. Ability of an area to support a healthy deer herd is determined largely by the average amount of palatable and available browse during winter as well as summer months. Condition of the plant also influences its use by deer. Slow-growing, suppressed plants seem tougher and less palatable than fast-growing sprouts. And thrifty plants can withstand repeated browsing and still renew their foliage, while stunted plants are rarely able to put out new growth once they are browsed.

Southern forests are capable of supporting enough deer to satisfy a large hunting demand,

the researchers say. Though various factors are important, letting the trees grow too thick is mainly responsible for low forage production and correspondingly sparse deer populations.

The booklet, "Deer Browse Plants of Southern Forests," first appeared in 1961 and has been reprinted because of its popularity. It was published in cooperation with the Forest Game committee of the Southeastern Section of the Wildlife Society. Copies are available on request from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.

Cave Diving Safeties

THE INCREASING numbers of cave diving fatalities in the State of Florida reflect an increasing percentage of out-of-state divers drowning, reports the Florida Skin Divers Association. Last year, virtually all fatalities involved nonresident divers, says the FSDA, and since 1960, at least 15 of these fatalities have been Georgians, such as the three young Savannah men who recently perished at Manatee Springs State Park.

"The Cave Diving Committee of the FSDA strongly urges all divers planning to dive in Florida caves to seek education in safe cave diving procedures first," says FSDA President Herbert R. Pruett, adding that such courses are offered by the National Association for Cave Diving, 2900 N.W. 29th Avenue, Gainesville 32601, and that the Florida Skin Diving Association will also hold a seminar on cave diving, in November 1973, at Jacksonville.

For more information, write FSDA, 1408 S.E. Bayshore Drive, Miami, Florida 33131.





For that
BIG ONE that
didn't get away!

ELIGIBILITY REQUIREMENTS
SPECIES

LARGEMOUTH BASS

.....8 pounds or larger

CHAIN PICKEREL

.....4 pounds or larger

BLUEGILL (BREAM)

.....1 1/2 pounds or larger

SHELLCRACKER

.....2 pounds or larger

BLACK CRAPPIE

.....2 pounds or larger

RED BREAST

.....1 pound or larger

All fish must be taken from the fresh waters of the state of Florida, as defined by the Game and Fresh Water Fish Commission. Fish must be caught on conventional fishing tackle, with artificial or live bait, in the presence of at least one witness.

The catch must be weighed and recorded at a fishing camp or tackle store within the state by the owner, manager, or an authorized agent of the respective establishment.

FLORIDA WILDLIFE'S FISHING CITATION

is available without charge, to any and all subscribers to Florida Wildlife Magazine, and their immediate families, who catch any of the fresh-water game fish of the prescribed species and size requirements. Citation, showing recorded date of the catch, will be mailed to the applicant upon receipt of the following application form that has been properly filled out and signed.

Only fishing citation applications received within 90 days from date of catch will be honored.

APPLICATION FOR FLORIDA WILDLIFE FISHING CITATION

The Editor, FLORIDA WILDLIFE Date _____
Game & Fresh Water Fish Commission, Tallahassee, Fla.

Please send me the Florida Wildlife Fishing Citation with the inscribed data listed below:

Name (please print) _____

Address _____

City _____ State _____ Zip No. _____

Species _____ Weight _____ Length _____

Type of Tackle _____

Bait or Lure Used _____

Where Caught _____ in _____ County

Date Caught _____ Catch Witnessed By _____

Registered, Weighed By _____ At _____

Signature of Applicant _____

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Cottonmouth Moccasin

Photo By Leonard Lee Rue III

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